

## In the Claims

1 1. (currently amended) A method for improving transmit diversity gain in a  
2 wireless communication system including a transmitter with a plurality of  
3 transmit antennas and a receiver with one receive antenna, comprising:  
4       partitioning the plurality of transmit antennas into a plurality of  
5 groups of transmit antennas;  
6       measuring, in the receiver, a phase of a channel impulse response for  
7 each transmit antenna;  
8       determining, independently, feedback information for each group of  
9 transmit antennas from the channel impulse responses;  
10       sending the feedback information for each group of transmit antennas  
11 to the transmitter;  
12       orthogonal space-time block encode input symbols in the transmitter  
13 to produce a data stream for each group of transmit antennas; and  
14       adaptive linear space encoding each data stream according to the  
15 feedback information for the group to produce an encoded signal for each  
16 transmit antenna of each group so that the phases for all received signals at  
17 the receiver are within ninety degrees of each other.

1 2. (original) The method of claim 1, wherein the determining further  
2 comprises:  
3 selecting one of the channel impulse responses as a reference channel  
4 impulse response; and  
5 normalizing the measured phase according to a phase of the reference  
6 channel impulse response so that a normalized phase is in a quadrant phase  
7 sector of the reference phase.

1 3. (original) The method of claim 2, in which the reference channel impulse  
2 response has a highest power.

1 4. (original) The method of claim 2, in which the quadrant phase sector  
2 spans ninety degrees.

1 5. (original) The method of claim 2, in which the normalization rotates the  
2 phase, and the feedback information encodes an amount of rotation.

1 6. (original) The method of claim 1, in which there are four transmit  
2 antennas, and each group has two transmit antennas and the feedback  
3 information is one bit for each group.

1 7. (currently amended) A wireless communication system, comprising:

2 a transmitter comprising:

3 a plurality of groups of transmit antennas;

4 means for generating input symbols;

5 an orthogonal space-time block encoder configured to produce  
6 a data stream for each group of transmit antennas;

7 an adaptive linear space encoder configured to produce an  
8 encoded signal for each transmit antenna of each group from the data  
9 stream for the group according to feedback information for the group  
10 group so that the phases for all received signals at the receiver are  
11 within ninety degrees of each other; and

12 a ~~transmitter~~ receiver comprising:

13 a single receive antenna;

14 means for measuring a phase of a channel impulse response for  
15 each transmit antenna;

16 means for determining independently the feedback information  
17 for each group of transmit antennas from the channel impulse  
18 responses;

19 means for sending the feedback information for each group of  
20 transmit antennas to the transmitter.